

IN THE CLAIMS

Please cancel claims 1 - 6.

Claim 1 (currently amended). A ~~c~~Continuous process for sterilization and, optionally, virus inactivation of fluid media, ~~which comprises~~ comprising the steps of ~~both~~ heating said fluid media to a temperature of 40° to 135°C and irradiating said fluid media with UV irradiation at an irradiation density of 5 to 300 W/m².
~~wherein said heating is to a temperature of 40° to 135°C. and said irradiation is conducted at an irradiation density of 5 to 300 W/m²~~
~~which further comprises~~
and cooling the heated fluid media, wherein said heating and cooling steps take place independently of one another and within 0.1 to 10 seconds of each other.

Claim 2 (currently amended). The pProcess according to Claim 1, ~~which comprises~~ holding wherein said fluid media is held at said temperature for up to 50 seconds.

Claim 3 (canceled).

Claim 4 (currently amended). The pProcess according to Claim 3-1, wherein said heating and cooling is performed in successive steps of heating, temperature holding , and cooling, and the UV irradiation is performed before, after or during one or more of said successive steps.

Claim 5 (currently amended). The pProcess according to Claim 3-1, wherein the heating is carried out with a high-performance heat exchangers ~~having a thermal conductivity of $k > 1000 \text{ W/m}^2 \cdot \text{K}$~~ .

Claim 6 (currently amended). Process according to Claim 5.4, wherein one or more of said successive steps are carried out in disposable reactors which are pre-sterilized and cleaned according to GMP.

Claim 7 (currently amended). An aApparatus for sterilization and, optionally, virus inactivation of fluid media, by a combined application of a heat treatment and UV irradiation treatment , comprising

at least a heat treatment reactor, with an optional temperature holding section,

a UV irradiation reactor and a cooling reactor, wherein at least the heat treatment reactor and the UV irradiation reactor each comprise a sterilization and/or inactivation chamber for through-flow of the fluid media, which chambers are formed of a deformable, helical, profiled hollow cylinder which is drawn tight onto the wall of a rigid, straight, cylindrical support body, the cylindrical support body of the chamber of the heat treatment reactor being of a heat conductive material and the cylindrical support body of the chamber of the UV irradiation reactor being transparent to ultra violet irradiation.

Claim 8 (currently amended).Apparatus according to Claim 7, wherein said deformable, helical hollow cylinder [(5)] is a corrugated plastic hose which is connected at both ends to distributor heads [(9, 10)] for delivery and discharge of said fluid media.

Claim 9 (currently amended). Apparatus according to Claim 8, wherein said distributor heads [(9, 10)] have tangential or radial product delivery and discharge lines, free of dead space, in an annular gap [(13)] between distributor head [(9, 10)] and support pipe [(6)].

Claim 10 (currently amended). Apparatus according to Claim 8, wherein the distributor heads [(9, 10)] are worked from the hose ends by thermal deformation of the corrugated hose or are made from a plastic material produced and worked by injection-molding or stretching, or by a combination of injection molding and

stretching, and are connected with a force fit to the hose ends which are cylindrically widened, with an O-ring connection [[[32, 5, 33)]] pressed on from the outside.

Claim 11 (currently amended). Apparatus according to Claim 8, wherein said corrugated hose has an outer jacket [[[21)]] or a reinforcement [[[50)]]].

Claim 12 (currently amended). Apparatus according to Claim 8-11, wherein said outer jacket [[[21)]] is formed by a shrinkable plastic tube, a pipe pushed over the plastic hose, or a two-part cylindrical shell, and said reinforcement is formed of a steel or plastic coil.

Claim 13 (currently amended). Apparatus according to Claim 7, wherein said UV reactor comprises one or more UV emitters [[[25)]] as energy source in the cylindrical support body [[[6)]]], and the cylindrical support body [[[6)]] is made of a material transparent to UV light, and optionally has a corrugated plastic hose as said deformable helical profiled hollow cylinder [[[5)]]].

Claim 14 (currently amended). Apparatus according to Claim 7, further comprising windows [[[64)]] formed in the distributor heads [[[9, 10)]] and sealed in the distributor heads [[[9, 10)]] via an O-ring connection [[[31, 64)]]], for observing the UV energy radiated into the ~~product~~ fluid media.

Claim 15 (currently amended). Apparatus according to Claim 14, further comprising UV sensors [[[26, 27)]] built into the distributor heads [[[9, 10)]] for detecting the UV radiation intensity radiated into the ~~product chamber~~ fluid media.

Claim 16 (currently amended). Apparatus according to Claim 7, wherein said heat treatment reactor [[[2)]] comprises a pipe formed of heat transmitting material as the cylindrical support body [[[34)]]], and a corrugated hose [[[5)]] made of plastic as said deformable helical profiled hollow cylinder.

Claim 17 (currently amended).Apparatus according to Claim 7, further comprising an insert element [[[35, 43)]] incorporated in the centre of the support pipe [[[34)]] of the heat treatment reactor [(2)] to narrow the cross section for heat transfer fluid flow through the cylindrical support body. ~~pipe (34)~~.

Claim 18 (currently amended).Apparatus according to Claim 17, wherein said insert element [[[35, 43)]] has terminal flange connections which are connected releasably by a thread or a bayonet closure [(44, 45)] and seal off the inner space of the support pipe [(34)].

Claim 19 (currently amended) (original).Apparatus according to Claim 18, wherein said insert element [[[35, 43)]] has a radial distributor [(40)] for heat transfer fluid.

Claim 20 (currently amended) Apparatus according to Claim 17, wherein the insert element [[[35, 43)]] has a helical inner contour.

Claim 21 (currently amended) Apparatus according to Claim 7, wherein said heat treatment reactor comprises a support pipe [(62)] which is closed at one end and is open at the other end and has, at said other, open end, an insert element [(35, 43, 52)] with inlet and outlet for heat transfer fluid.

Claim 22 (currently amended) Apparatus according to Claim 21, wherein the insert element [(35, 43, 52)] is comprised of a flanged pipe in which an inlet line is connected to the pipe interior and an outlet line is connected to a gap [(47)] between the insert element and the support pipe [(62)].

Claim 23 (currently amended) Apparatus according to Claim 7, wherein said heat ~~transfer~~ treatment reactor comprises an electrical resistance heating source [(57)], which is inserted into a support pipe [(63)].

Claim 24 (currently amended). Apparatus according to Claim 23, further comprising an annular gap ~~[(47)]~~ between said heating source ~~[(57)]~~ and said support pipe ~~[(63)]~~, which annular gap is filled with a heat transfer medium ~~[(59)]~~.

Claim 25 (currently amended). Apparatus according to Claim 24, further comprising a receiving vessel ~~[(58)]~~ connected to the support pipe ~~[(63)]~~ adapted to receive heat transfer fluid ~~[(59)]~~ displaced upon insertion of heat source ~~[(57)]~~ into said support pipe, or upon operation of said heat source.

Claim 26 (currently amended). Apparatus according to Claim 7, wherein said heat treatment reactor ~~[(2)]~~ comprises an inlet and an outlet having ~~PT100-resistance~~ temperature sensors ~~[(60, 61)]~~ for temperature determination of ~~determining~~ the heat transfer media , ~~medium-temperature, the product temperature of the~~ fluid media , or ~~both~~ the heat transfer media temperature and the fluid media temperature.

Claim 27 (currently amended) Apparatus according to Claim 26, wherein said sensors ~~[(60, 61)]~~ are connected to flow regulators for the heat transfer medium stream, the ~~product-stream~~ fluid media or ~~both~~ the heat transfer medium stream and the fluid media stream.

Claim 28 (currently amended).The process of claim 1, wherein said fluid media is selected from the group consisting of foodstuffs, milk products, fruit juice products, chemical or pharmaceutical products, viral vaccines, active substance or proteins produced by genetic engineering, active substances or proteins from transgenic animals or plants, and blood plasma, or products obtained from blood plasma.

Claim 29 (currently amended) Apparatus according to Claim 11, wherein said outer jacket ~~[(21)]~~ is formed by a shrinkable plastic tube, a pipe pushed over the plastic hose, or a two-part cylindrical shell, and said reinforcement is formed of a steel or plastic coil.